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मानक

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“पुराने को छोड़ नये के तरफ”

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“Step Out From the Old to the New”

IS 8271-2-15 (1985): Quartz Crystal Units Used for Frequency Control and Selection, Part 2: Series AA for Oscillators, Section 15: Quartz Crystal Unit Type AA-15 [LITD 5: Semiconductor and Other Electronic Components and Devices]



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“Invent a New India Using Knowledge”



“ज्ञान एक ऐसा खजाना है जो कभी चुराया नहीं जा सकता है”

Bhartrhari—Nitiśatakam

“Knowledge is such a treasure which cannot be stolen”

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Indian Standard

SPECIFICATION FOR QUARTZ CRYSTAL UNITS
USED FOR FREQUENCY CONTROL AND SELECTIONPART 2 SERIES AA FOR OSCILLATORS
Section 15 Quartz Crystal Unit Type AA-15

0. General — This standard shall be read in conjunction with IS : 8271 (Part 1) - 1981 'Specification for quartz crystal units used for frequency control and selection : Part 1 General requirements and tests (first revision)'.

1. Outline and Dimensions — Holder outline shall conform to type AA [see IS : 4570 (Part 2) - 1983 Specification for crystal unit holders : Part 2 Metal, solder seal, two pin crystal unit holders types AA and AB].

2. Marking — See 8 of IS : 8271 (Part 1) - 1981.

3. Construction and Workmanship — See 7 of IS : 8271 (Part 1) - 1981.

4. Test Schedule and Detail Requirements

4.1 General Conditions for Test — See 9.2 of IS : 8271 (Part 1) - 1981.

4.2 Test Schedule — The sequence and grouping of type, routine and acceptance tests shall be as per 9.1 of IS : 8271 (Part 1) - 1981.

4.3 Detail Requirements — The detail requirements applicable to this particular type of crystal unit shall be as specified in Table 1.

TABLE 1 DETAIL REQUIREMENTS OF QUARTZ CRYSTAL UNIT TYPE AA-15

Characteristics (1)	Requirements (2)	
a) Type of holder	AA (see 1)	
b) Frequency range	0.8 to 20 MHz	
c) Frequency tolerance :		
i) Operating temperature range	± 20 ppm	
ii) Operable temperature range	± 30 ppm	
d) Load capacitance	Infinity	
e) Mode of oscillation	Fundamental	
f) Temperature range :		
i) Operating	— 40° to +90°C	
ii) Operable	— 55°C to -40°C and +90°C to 105°C	
g) Test set, calibration values, and rated drive level	See Table 2	
h) Capacitance shunt	7 pF (Max)	
j) Resonance resistance	See Table 3	
k) Shock [As per 9.15 severity of IS : 8271 (Part 1) - 1981]	Below 2 MHz	2 MHz and above
i) Frequency change permitted	± 10 ppm	± 5 ppm
ii) Resonance resistance change permitted	± 15 percent	± 10 percent
m) Vibration [As per 9.16.1 (severity A) of IS : 8271 (Part 1) - 1981]	Below 2 MHz	2 MHz and above
i) Frequency change permitted	± 10 ppm	± 5 ppm
ii) Resonance resistance change permitted	± 15 percent	± 10 percent
n) Temperature cycling :	Below 2 MHz	2 MHz and above
i) Frequency change permitted	± 10 ppm	± 5 ppm
ii) Resonance resistance change permitted	± 15 percent	± 10 percent
p) Ageing :		
i) Frequency change permitted	5 ppm	

TABLE 2 TEST SET, CALIBRATION VALUES AND RATED DRIVE LEVEL

[Table 1 (g)]

Sl No.	Frequency Range MHz	Calibration Values			Rated Drive Level mW	Test Set
		Resistance ohms	Crystal Current mA	Resistor Voltage Drop Volt		
(1)	(2)	(3)	(4)	(5)	(6)	(7)
i)	From 0.8 to 1.5	100	10	—	10.0 ± 2.0	TS-330/TSM
ii)	Over 1.5 to 2.25	50	15	—	10.0 ± 2.0	
iii)	Over 2.25 to 3.4	40	15	—	10.0 ± 2.0	
iv)	Over 3.4 to 5.1	25	20	—	10.0 ± 2.0	
v)	Over 5.1 to 7.5	14	25	—	10.0 ± 2.0	
vi)	Over 7.5 to 10	11	30	—	10.0 ± 2.0	
vii)	Over 10 to 15	13	20	—	10.0 ± 2.0	
viii)	Over 15 to 20	10	—	0.22	5.0 ± 1.0	TS-683/TSM

TABLE 3 RESONANCE RESISTANCE

[Table 1 (j)]

Frequency Range MHz	Maximum Resonance Resistance ohms
From 0.8 to 0.85	520
Over 0.85 to 0.9	480
Over 0.9 to 1	440
Over 1 to 1.12	400
Over 1.12 to 1.25	380
Over 1.25 to 1.37	340
Over 1.37 to 1.5	300
Over 1.5 to 1.62	280
Over 1.62 to 1.75	250
Over 1.75 to 1.87	220
Over 1.87 to 2	190
Over 2 to 2.12	170
Over 2.12 to 2.25	150
Over 2.25 to 2.6	130
Over 2.6 to 3	90
Over 3 to 3.4	70
Over 3.4 to 3.75	52
Over 3.75 to 4	45
Over 4 to 5	37
Over 5 to 7	25
Over 7 to 10	20
Over 10 to 15	18
Over 15 to 20	15

EXPLANATORY NOTE

This standard (Part 2/Sec 15) covers the requirements of crystal units quartz style QC-10 of JSS 50905 (1971) 'Detail specification for crystal unit, quartz style QC-10, QC-11, QC-14, QC-15, QC-16, QC-17, QC-18 and QC-19, issue by the Directorate of Standardization, Ministry of Defence (India).